



## SHIRE WORK BOAT MANUAL

**SHIRE 14 30 WB**

**SHIRE 14 40 WB**

**SHIRE 14 50 WB**

Please read in conjunction with  
Yanmar  
&  
PRM Gearbox Manual.



Enter your engine identification details in the spaces provided above.

E. P. BARRUS LIMITED, Launton Road, Bicester, Oxfordshire. OX26 4UR  
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## Declaration of Conformity for Recreational Craft Propulsion Engine with the requirements of Directive 94/25/EC as amended by 2003/44/EC.

Name of Engine Manufacturer: **Yanmar Co LTD.**

Address: **Yanmar Europe B.V, Brugplein 11, 1332 BS Almere-de Vaart, Netherlands.**

Name of Authorised Representative: **E.P.Barrus LTD**

Address: **E.P.Barrus LTD, Launton Road, Bicester, Oxon, OX26 4UR, England**

Engine type approved according to: Stage II of Directive 97/68/EC, 88/77/EC

Description of Engine(s) and Essential Requirements

**Engine Type:** Inboard Engine

**Fuel Type:** Diesel

**Combustion Cycle:** 4 Stroke

Identification of Engine(s) covered by this Declaration of Conformity

Engine Model	Engine Type	Engine Family code	Type Approval Certificate Number
Shire 30WB	3 TNV 82A BDSA	YD1300DNMDEC	e13*97/68DA*2001/63*0574*06
Shire 40/50WB	4 TNV 88 DSA	5YDXL2.19K4N	e13*97/68GA*2001/63*0545*11

Essential Requirements	Standards	Other normative document/method.	Technical file	Specify in more detail *= Mandatory standard.
Annex 1.B- Exhaust Emissions				
B.1 Engine Identification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B.2 Exhaust emission requirements	<input type="checkbox"/> *	<input type="checkbox"/>	<input type="checkbox"/>	* EN ISO 8178- 1:1996
B.3 Durability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B.4 Owner's Manual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Annex 1. C- Noise Emissions	See Declaration of Conformity of the craft in which the engine(s) has(have) been installed			

This declaration of conformity is issued under the sole responsibility of the manufacturer. I declare on behalf of the engine manufacturer that the engine(s) [is (are) in conformity with the type(s) for which above mentioned EC type-examination or type approval certificate(s) has (have) been issued and]<sup>1</sup> will meet the exhaust emission requirements of Directive 94/25/EC as amended by Directive 2003/44/EC when installed in a recreational craft, in accordance with the engine manufacturer's supplied instructions and that this (these) engine(s) must not be put into service until the recreational craft which it is (they are) to be installed has been declared in conformity with the relevant provisions of the above mentioned Directives.

Tim Hart

Sales Director

Signed: Bicester, UK

## PLEASE NOTE:

This manual has been compiled to help you to operate your engine and its associated parts with safety and pleasure. Please read it carefully and familiarise yourself with the engine and its parts before operation.

E.P.Barrus reserves the right to change the specification of its products and manuals without prior notice.

Depending upon the equipment specification of the engine and accessories fitted, there may be discrepancies with the information presented in this handbook. No claims may be pursued in this respect.



### **WARNING:**

THIS MANUAL FORMS AN INTEGRAL PART OF THE ENGINE IT ACCOMPANIES, IF A TRANSFER OF TITLE OCCURS, IT MUST ALWAYS BE HANDED OVER TO THE NEW OWNER.

## WARRANTY

This Limited Warranty provides coverage for three (3) years (or 2000 hours which ever occurs first) for commercial users from the date of warranty registration. The repair or replacement of parts, or the performance of service under this warranty, does not extend the life of this warranty beyond its original expiry date.

PRM gearboxes are covered by a two (2) year warranty.

To ensure that you have been registered for your warranty, please ask your Boat-BUILDER or Engine supplier to provide your portion of the registration form.

Engine alternator, starter motor and electrical components are only covered by a one (1) year warranty.

## **CONDITIONS THAT MUST BE MET IN ORDER TO OBTAIN WARRANTY COVERAGE**

Warranty coverage is only available from an authorised dealer in the country in which the sale occurred. Routine maintenance outlined in the Owners Manual must be performed using genuine parts in order to maintain warranty coverage. If the customer performs maintenance, Barrus reserves the right to make future warranty coverage possible only with proof of proper maintenance.

## **WARRANTY CLAIMS**

Warranty claims shall be made by an authorised dealer or boat builder.

The dealer or boat builder will then arrange for the inspection and any necessary repairs. If the repairs carried out are not covered by the warranty, purchaser shall pay for all related labour and material, and any other expenses associated with that service.

## **WHAT IS NOT COVERED**

This limited warranty does not cover routine maintenance items, adjustments, normal wear and tear, damage caused by abnormal use, operation of the product in a manner inconsistent with the recommended operation/duty cycle section of the Owners Manual, accident, submersion, improper installation (proper installation specification and techniques are set forth in the Operations and First time running sections in this manual), use of an accessory or part not manufactured or sold by us, or alteration or removal of parts. Expenses related to crane-out, launch, towing, storage, telephone, rental, inconvenience, slip fees, insurance coverage, loan payments, loss of time, loss of income, or any other types of accidental or consequential damages are not covered by this warranty.

Failure to use John Deere approved oils and coolants will invalidate any warranty (Shire 90).

Engine electrical systems fitted with alternator boost charge systems or any other electrical management systems other than those approved by Barrus are not covered by warranty.

Engine and fuel equipment is not covered by warranty if bio-diesel is used in the fuel system. Also if no type of water trap is incorporated into fuel system.



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# **SECTION 1 - Safety Precautions**

## **1. General**

It is the responsibility of the installer/operator to ensure that the finished installation complies with the relevant health & safety requirements and the recreational craft directive before commissioning.

Ensure that the engine battery isolator switch is in the off position and the key removed from the control panel before carrying out any maintenance or repairs.

## **2. Lifting**

The lifting points supplied with the engine are for lifting the engine/gearbox only. A suitable spreader bar must be employed to prevent over-stressing either bracket during any lift.

## **3. Rotating Shafts and Belts**

The engine and its accessories are not to be put into operation until they are integrated into the boat as a whole. No person should be in the engine compartment and the engine cover or deck hatches should be closed whilst the engine is running.

## **4. Exhaust System**

Exhaust gases may have temperatures as high as 600°C and contain elements which are harmful if ingested.

It is therefore essential that exhaust systems are gas tight and lagged to prevent accidental burning.

## **5. Launching and Lifting Boats**

Care must be taken when launching or craning new boats into or out of the waterway, so that water does not enter the engine via the exhaust system or air vents. It is recommended that these are blocked temporarily whilst undertaking this procedure.

## 6. Batteries



**WARNING:**  
**EXPLOSIVE GASES / SULPHURIC ACID.**

- Batteries can produce explosive gas; keep sparks and flames away from the battery.  
**NO SMOKING**
- Batteries contain sulphuric acid; if splashed on skin or eyes, flush well with water and seek medical advice.
- Keep the battery tops and battery compartment ventilated at all times.
- If disconnecting the battery; remove the earth lead **FIRST**; and re-connect it last.
- If charging the battery; ensure that the charger is switched off before connecting and disconnecting
- Do not tip the battery on its side.
- Please see label on battery or manufacturer's instructions for specific information.

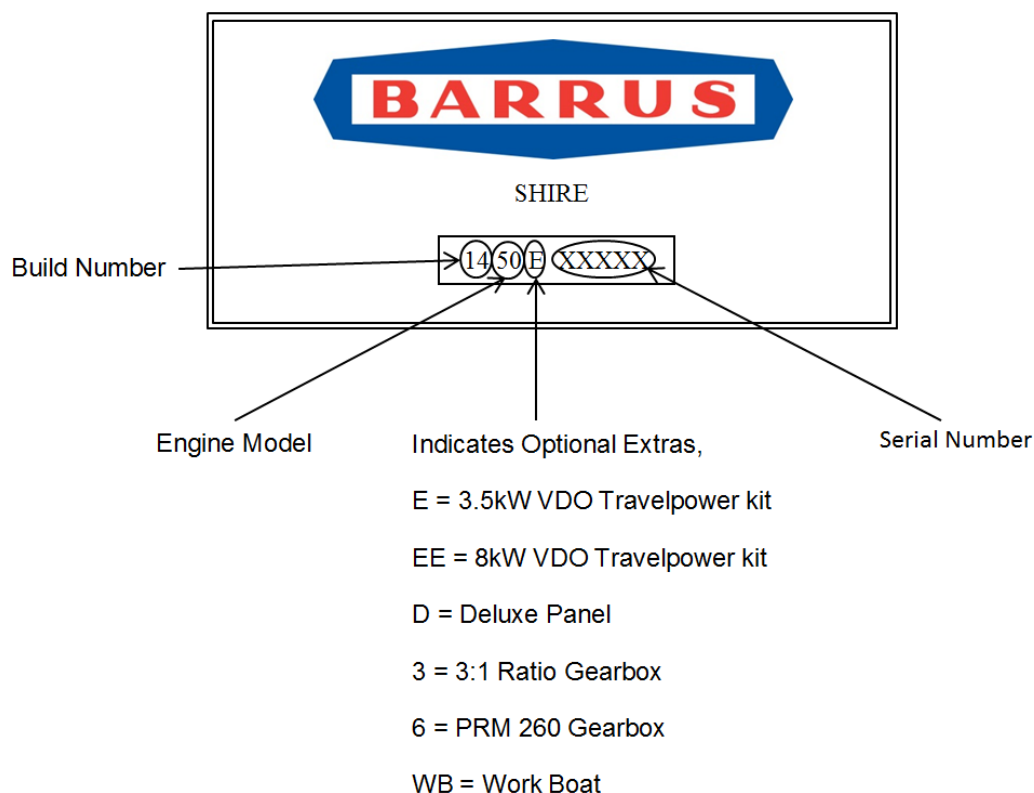


## SECTION 2 - Engine Identification

Please quote the engine identification number during any enquiry or when ordering spare parts. Use the space below to record these details.

This can be found engraved into the brass plate on top of the engine rocker cover and stamped to the crankcase next to the starter motor.

An example of the engine identification plate is shown below:



Note: There are a number of optional extras that may be fitted to an engine for particular customer's engine that are not listed here.

A list of common item service part numbers can be found in Shire service parts in Section 6. (P 26).

## SECTION 3 - Installation

### 1. Ventilation

- All internal combustion engines radiate heat and require cool, clean air to aid complete combustion.
- Please ensure that adequate engine room ventilation is provided, by fitting at least two vents of an aperture of not less than 10,000 mm<sup>2</sup> each, (16 in<sup>2</sup>).

***An allowance must be made for any grills or louvers or bends placed in the airflows and generally an increase of 25% in area is sufficient to overcome any restriction problems.***

### 2. Engine Beds

- These should be a minimum of 10mm thick, extended rearward and be welded to the hull and forward to the bulkhead. Webs or gussets must be welded in place midway to prevent flexing. They may be steel or stainless steel glassed into a GRP hull.

### 3. Pressurised Water Header Tank

- The pressurised header tank should be mounted higher than the level of the engine and no more than 1 metre from the engine, to prevent cooling system air locks.

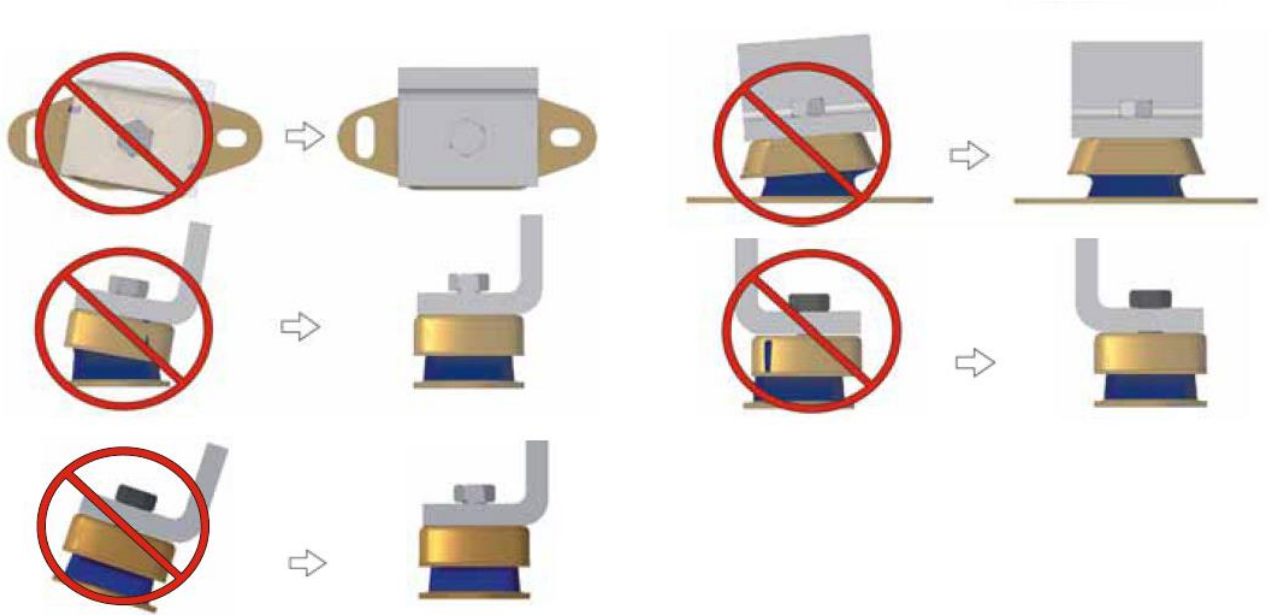
### 4. Shaft Connection and Propeller Selection

- Some type of flexible coupling must be used to connect the gearbox output flange to the propeller shaft flange. Various coupling flanges are widely available to assist with this.
- Please note, underperforming engines will not be covered under warranty if the cause of the poor performance is found to be the use of an inappropriate propeller.

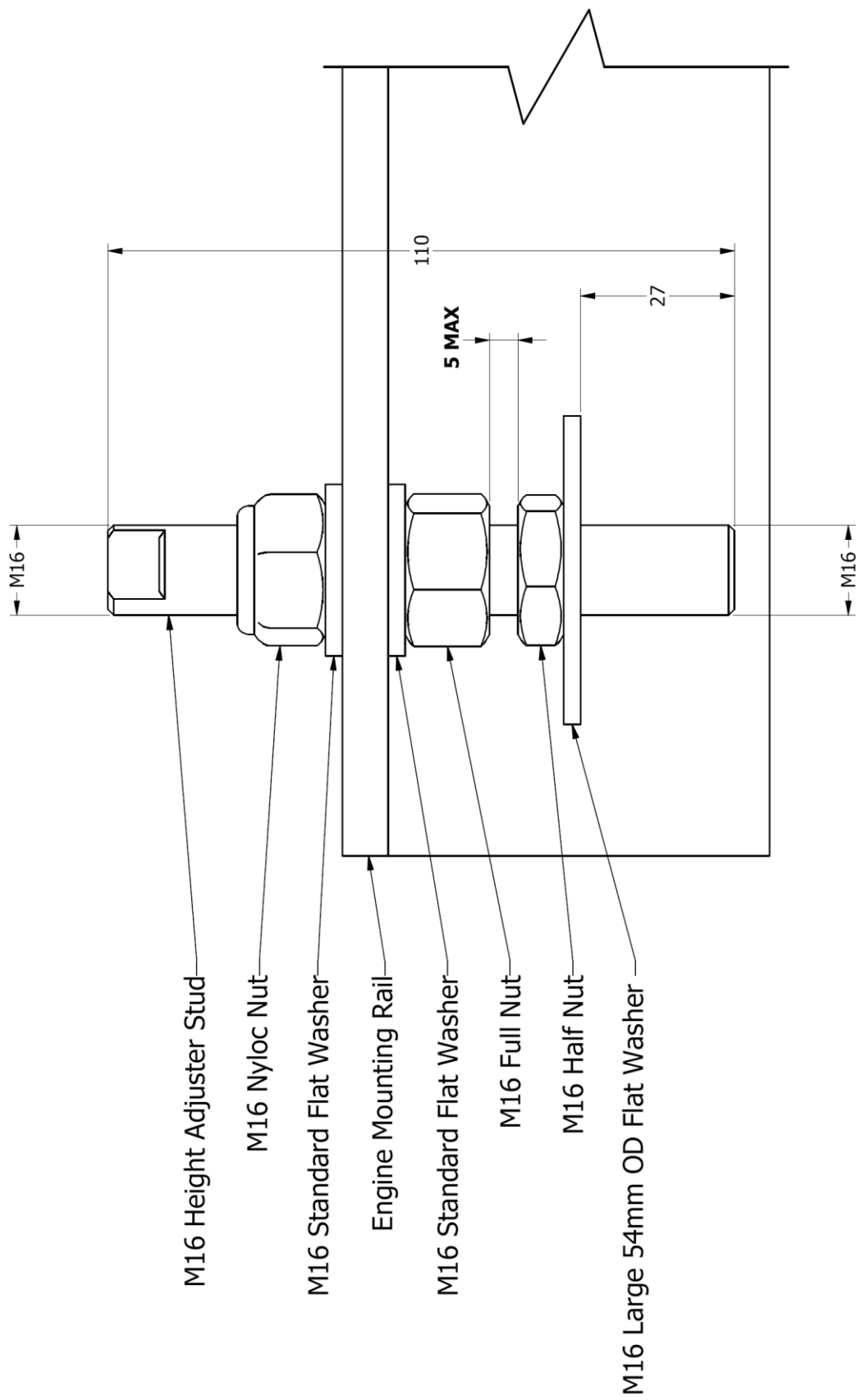
### 5. Engine Anti-Vibration Mounts

- Ensure that the engine feet do not end up at the top of the thread on the engine mounts, this puts undue pressure on them and can result in excessive engine movement and premature mount failure. If this is a problem put steel packing plates under the mounts. Packing plates 25mm thick are available: order RDG3906 Engine mount spacer. Alternatively they can be manufactured locally.
- Ensure that the engine has been installed for at least 24 hours before shaft alignment is checked, to allow the mounts time to settle under the engine weight.

- Ensure that the anti-vibration mount centre screw is sufficiently raised so as not to touch the engine bed. If this occurs, excessive engine vibration will be experienced through the hull.



Care should be taken to install mounts parallel to the engine rails and washer and locknut firmly tightened on the cover of the mount. The maximum distance from the top of the locknut to the base of the adjusting nut must not exceed 5mm; any greater adjustment should be made up using shims below the mount.



## **6. Engine Alignment**

- The gearbox output shaft flange and propeller shaft input flange must be almost perfectly aligned. A maximum of  $\pm 0.05\text{mm}$  (0.002") misalignment in any plane is acceptable. Ensure alignment is rechecked after the first 4 hours of running, after the first month, and thereafter annually.
- If the engine is out of alignment it will result in excessive vibration and possible damage to the stern tube and propeller shaft.
- Boats that are fitted with fully flexible drive couplings should still have the engine and shaft alignment as close as possible. A dummy shaft may be required for this purpose. (Note: some types of flexible shaft couplings require the input and output to be misaligned, check with the coupling manufacturer's installation instructions).

## **7. Electrics**

- Do not attach any part, hose or cable to the engine wiring harness. There is a warning label attached to the harness to remind you of this.
- Connect the wiring extension harness multi plug to the panel plug, and the other end to the engine. Connect the single wire that is adjacent to the 11 pin plug
- Connect the start battery positive cable to the electrical terminal post adjacent to the sump pump.
- The starter motor battery cable must have a cross sectional area of at least  $50\text{mm}^2$ .

## **8. Engine Oil**

- All Shire engines are supplied fully run in.
- Check oil levels in engine and gearbox before starting.
- Use a good quality engine oil SAE 15W/ 40 API class CD.

## **9. Fuel**

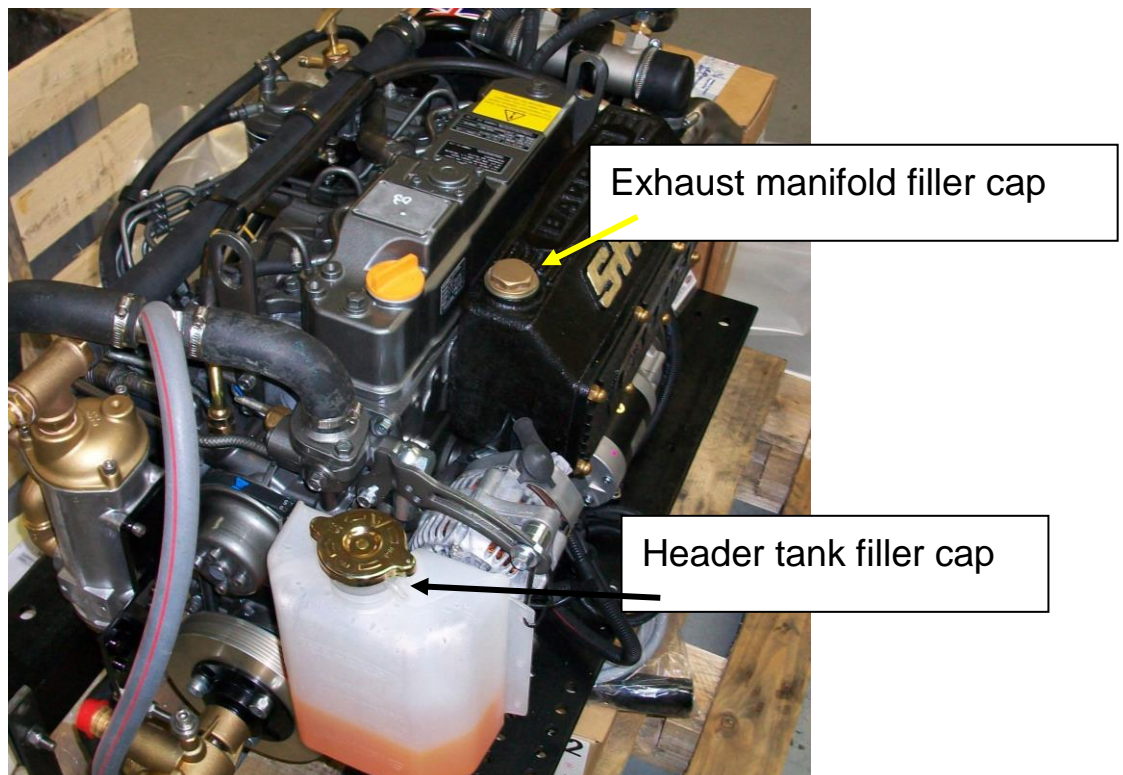
- Ensure the main fuel tank is clear of dirt & water.
- A separate water trap is strongly advised.
- Connect fuel feed and return hoses from engine to main supply and return lines to main fuel tank, ensuring they are connected the correct way around. The hose to the fuel lift pump is the inlet.
- The engine hoses are supplied with  $\frac{5}{16}"$  (8mm) OD metal hose tails, and should be securely fitted to the main supply and return pipes with compression fittings.
- The engine hoses should have sufficient slack to absorb engine movement without

placing strain on the hoses, and be securely clipped to prevent accidental damage and chafing.

- Initially fill the fuel system by turning the ignition on to operate the electric fuel pump. Loosen the bleed screw on the top of the primary fuel filter/water trap and close when fuel begins to flow clearly (no bubbles). It is rarely necessary to bleed the injection pump or injectors upon installation as the engine will already have fuel in it from the engine run in and test procedure.

## 10. Coolant

- Prepare coolant mix of 50% clean tap water and 50% antifreeze.
- Fill the engine cooling system for the first time through the header tank filler cap on models 30 & 40, and through the exhaust manifold filler cap and then via the header tank on model 50. Start and run the engine for several minutes to dispel any remaining air bubbles, with the pressure cap removed.
- N.B. After running the engine for the first time, monitor the water level frequently as trapped air bubbles may be expelled. Top up the system as necessary.
- Ensure the top header tank connection goes to the small hole connection on the tank.



Shire 50

## 11. Control Cables

- Connect engine speed control cable. With the engine off, ensure that the engine speed control lever achieves full travel from idle to full speed. Adjust if necessary.
- Check the gearbox shift lever selects positively and that the drive direction corresponds with the gearshift control lever. Ensure that the gearbox control lever and the gearshift lever are both in neutral before connection. Adjust if necessary.
- Ensure that when forward is engaged on the throttle that forward is engaged on the gearbox.

## 12. Seawater Strainer

A bulkhead mounted seawater strainer or similar is not supplied with the engine, we recommend that one is fitted between the seawater inlet (seacock) and the sea water pump inlet.

## 13. Control Panel

All Shire engines are supplied with high quality engine control panel that all show RPM and hours run and include warning lights and a warning buzzer, the deluxe panels also have gauges for water temp, oil pressure and battery charging. The panels are designed to be splash proof and are correctly installed with the gauges vertical. Do not install so that they remain out in the open, or cover up when not in use.

Dash Panel Calibration Procedure:

- Connect dash panel plug to engine wiring loom plug
- Turn ignition on (do not start engine)
- Press and hold black button on rear of tacho until “H –“ appears on the digital display on the bottom of the tacho (on the front).
- When pressing and holding the black button on rear of tacho, the value displayed will increase/decrease until button is released. Then when pressed again it will increase/decrease in the other direction, keep doing this until the digitally displayed value on bottom of tacho reaches the correct value, according to the type of alternator (see table). Must be set to the alternator with blue and black wire connected to it.
- Confirm settings to tacho meter reader.
- An optical tachometer is required to check the reading.

Barrus Alternator (Amps)	Barrus tacho reading
50	10.50 – 11.00
70	15.00
110	18.00
140	19.50 - 20.00
240	22.00

Alternative or non-standard alternators will require calibrating and checking by trail and error with a hand held tacho until the engine speed and indicated tachometer speed are the same.

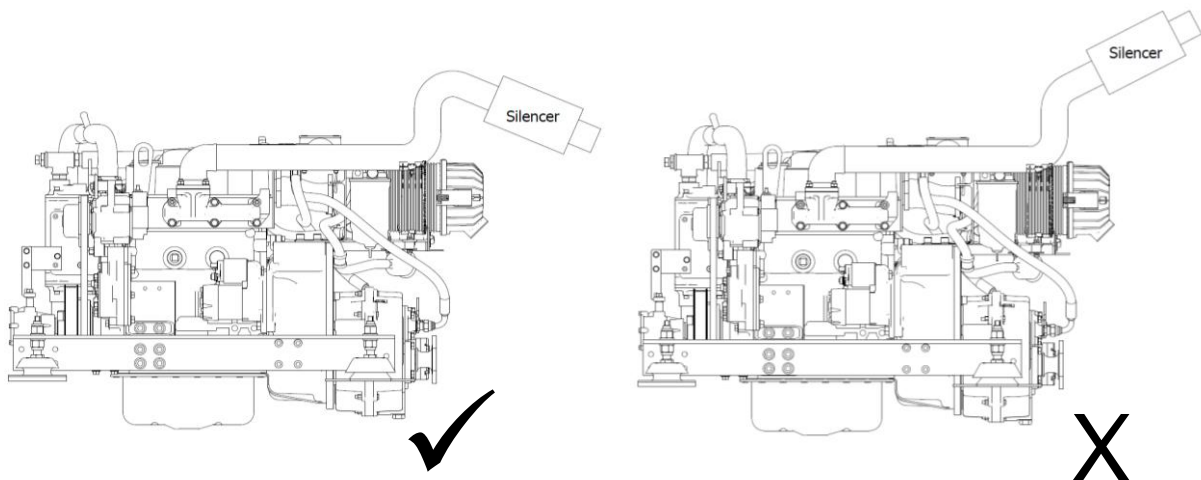
Engine energise to stop systems are available as an optional extra.

#### 14. Seawater Pump Hose Inlet Size

- Shire 30WB – 20mm (approx. 3/4")
- Shire 40/50WB – 25mm (approx. 1")

#### 15. Exhaust System

The exhaust outlet size on the engine is 1 1/2" BSP female. There must be a flexible exhaust hose of suitable exhaust grade between the engine and the silencer or hull outlet. The outlet must be above the waterline at all times.



- Make sure exhaust increases then decreases in height as shown above



## 16. Hydraulic Drive Transmissions

If an engine is to have a **Hydraulic Drive Transmission** attached to it, a number of points must be observed.

Bobtail engines (i.e. Engines supplied without a marine gearbox), normally **do not** have a gearbox oil cooler fitted, however if a cooler is supplied, this will only be suitable to cool a conventional marine gearbox.

Hydraulic drive transmissions generate far more heat than a conventional marine gearbox, therefore the size of oil cooler installed must be calculated by the hydraulic drive transmission supplier; to ensure it has sufficient cooling capacity, and is sized appropriately taking into account:

- Maximum engine power
- High ambient summer air temperature
- Summer River/Canal/Sea temperature
- No additional restriction to engine coolant flow is present

## 17. Hydraulic Pump Drive Option (Shire 38 / 40 / 45 / 50)

For SAE type pump (9T).

If a hydraulic pump is required to drive items such as bow thrusters or hydraulic winches then the following parts are required to enable drive to be taken from the engine power take off.

Part No. 129484-26200 incorporates:

- Packing (on gear case side): 171353-26081
- Cover: 121023 - 26070
- Cover packing: 121023-26061

Ratio: 0.903:1

## 18. Installation Check list

Engine alignment correct, clearance all round, check propeller turns by hand (Ensure ignition is off battery and battery master switch is off)	
Anti-Vibration mounts correct height, spacers if necessary	
Exhaust system as specified	
Battery leads are of correct size, tightened and start battery is charged	
Check tension of alternator belts, wiring connected and belt alignment checked If removed	
Check fuel system is connected correctly and primed	
Fuel line water trap installed and water drained off	
Check header tank and skin tank connections are correct way round, constant pipework rise to header tank	
Check level of coolant in header tank and correct ratio	
All air has been bled from skin tank, calorifier and pipework	
Engine and gearbox oil levels are as specified	
Throttle and gear cables correctly adjusted and operating smoothly	
All pipework and cabling supported and not chaffing, slack to allow movement of engine	
Confirm panel and warning lights operational	
Check for leaks	
Explain/Demonstrate off season storage and maintenance	
Installer's signature	
Installer name/company	

## SECTION 4 - Operation

### 1. Starting the Engine for the First Time

- Remove ignition key.
- Ensure all oil and coolant levels are checked.
- Ensure engine battery is connected. Battery master switch must be turned on.
- Check all connections and mountings are tight.
- Ensure that the raw water seacock is turned on.

### 2. Starting Procedure

Note: Shire engines **do not** have a cold start function as standard. Therefore the glow plug light will not illuminate.

- Ensure the gearshift control lever is set to **neutral**, and that persons are clear of any moving parts.
- Insert the ignition key and turn to the first position, **on**.
- Observe warning lights (and gauges on deluxe panel). NB the engine overheat light will only illuminate when the water temperature exceeds the safe level
- Listen for warning buzzer.
- Turn key to second position, **start**, and hold to crank.
- Crank the engine for no more than 15 seconds.
- On engine start, immediately release key.
- Key will return to first position, **on**.
- The warning buzzer will stop and on the deluxe panel the oil pressure gauge will show an oil pressure of 3– 4 bar [45-60 psi].
- Should any warning light not go out, or if there is no reading on the oil pressure gauge, the buzzer will continue sounding. In this case, stop the engine immediately and check the relevant system (Note: if the charge light does not go out, rev the engine briefly).
- Once started check that sea water is coming out of the water cooled exhaust outlet in the hull of the boat
- Stop engine **immediately** if any abnormal noises are detected.
- Visually check the engine for oil, fuel and coolant leaks, (after initial startup and at regular intervals, N.B. engine must be stopped to carry out this check).

### 3. Stopping Procedure

- Move speed control lever to idle position.
- Turn key to **off** position.

### 4. Refuelling

- All Shire marine engines run on diesel fuel. **DO NOT USE BIODIESEL**
- Please note that if the vessel is to be left for any period of time the fuel tank should be full to eliminate the build up of condensation and formation of water in the fuel tank.

### 5. Diesel Fuel Additive

The use of diesel fuel additive is strongly recommended on Shanks & Shire engines. The quality of the fuel available when cruising is often unknown; also the fuel may have been in storage for long periods of time. The use of additives will ensure that your engine fuel injection system is in top condition which should result in many years of smooth reliable operation without the cost and inconvenience of expensive breakdowns due to poor quality fuel. It has also been found that improvements in fuel consumption and startability are an added benefit of using this product.

Diesel fuel additive is available from your Shire dealer in a handy 375ml container, part number RDG80210219.

### 6. Exhaust Back Pressure

- Use 50mm ID suitable marine flexible exhaust hose on the 30 model engine and 60mm on the 40 and 50 models. Do not step down to a smaller size.
- The engine exhaust outlet must be at least 200mm (8") above the outside seawater level of the hull. If not an exhaust high rise kit and/or lock box/Swan neck must be used to prevent sea water flowing back up the exhaust and causing engine damage.

## SECTION 5 - Service Procedure

### 1. Engine Oil and Filter Change



#### CAUTION:

**WEAR DISPOSABLE GLOVES AND BEWARE OF HOT OIL AND ENGINE BLOCK.  
REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- Change the engine oil while the engine is still hot.
- Remove the blanking plug in the sump pump spout. [6mm Allen key] Note (if there is an optional gearbox oil drain pump) the engine sump is the pump mounted adjacent to the starter motor.
- Place a plastic tube over the spout and into a container. Operate the pump handle to empty the sump. (Remember to refit the blanking plug afterwards).
- Place a drip tray under the engine to catch the small amount of oil that will escape from the oil filter. Using a strap type oil filter removal tool (supplied), slacken the filter from the engine block in an anti-clockwise direction, remove the tool and spin off the filter.
- Lightly oil the new filter O-ring seal and install the filter onto the engine. Spin it on in a clockwise direction and finally tighten **by hand only** as firmly as you can.
- Refill the sump using the oil filler cap in the rocker cover on top of the engine.
- Oil level should be to the top mark on the dipstick.
- Run the engine for 5 minutes to fully circulate the oil, and check for leaks, stop the engine. Wait 5 minutes before checking the oil level with the dipstick and top up if required.
- Do not overfill with oil above the maximum level marker as this may cause damage to the internal components of the engine.

## 2. Air Filter Check & Change



### **CAUTION:**

**WEAR DISPOSABLE GLOVES AND BEWARE OF HOT ENGINE BLOCK.  
REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- Release the 2 spring clips, pull off the end cover to reveal the filter element. The element simply pulls out.
- The air filters elements are constructed of pleated paper and requires regular inspection for dirt or dust. Air filter elements cannot be cleaned and must be replaced.
- The engine requires an unrestricted flow of clean air to run efficiently. Increased levels of smoke and high fuel consumption and eventually engine damage will occur if the air filter is not maintained.
- To fit the new element, slide the open end of the filter element into the main body; gently push the element home until fully seated. Refit the end cover.

## 3. Gearbox Oil Change



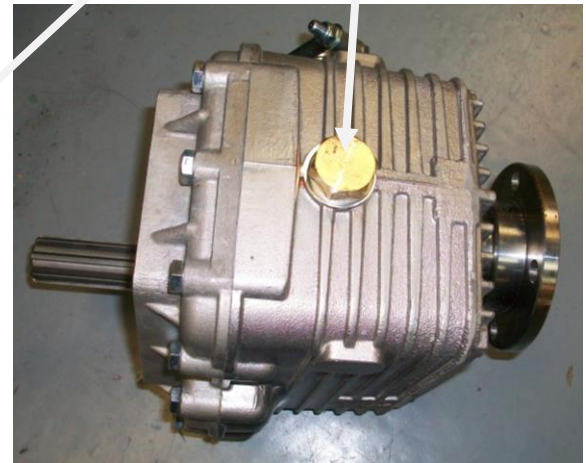
### **CAUTION:**

**WEAR DISPOSABLE GLOVES AND BEWARE OF HOT OIL AND GEARBOX CASINGS.  
REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- Change the gearbox oil while it is still hot. (Please refer to PRM gearbox manual for more information).
- Place a tray beneath the gearbox that will hold at least 2.0 litres.
- Undo the gearbox drain plug, and remove, allow the oil to drain fully.
- Replace the drain plug, ensure that the sealing washer (if used) is still in place, and in good condition, tighten. Fit a new washer if required.
- Refill the gearbox with oil to the upper mark on the dipstick. Screw dipstick in fully to establish level.
- Do not overfill gearbox as this can damage the internal components.
- Note; Some gearboxes may have a gearbox drain pump fitted as an optional extra. In this case use the drain pump to remove the oil.



Level dipstick /  
Filler plug



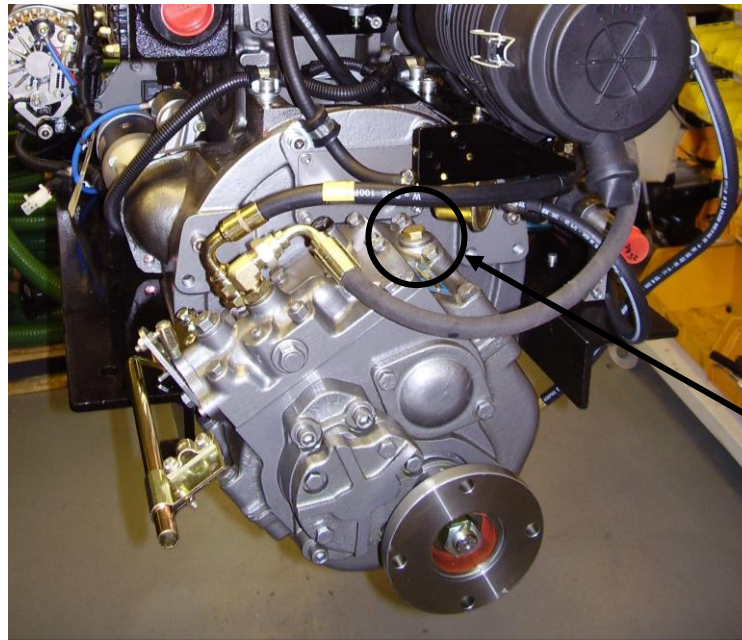
Magnetic drain plug  
(Viewed from underneath)

PRM 150 gearbox



Level dipstick /  
Filler plug

## PRM 260 gearbox



Level dipstick /  
filler plug

### Disposal of Oil and Related Items

- Please dispose of used oil and oil filters safely with due regard for the environment, and take to your local waste oil disposal point.
- Do not allow oil or contaminated parts to enter the inland waterway system.

### 4. Primary Fuel Filter Water Drain



**CAUTION:**

**WEAR DISPOSABLE GLOVES.**

**REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- Place a small drain bowl under the primary fuel filter/water trap.
- Loosen the drain screw located in the bottom of the fuel filter/water trap.





- Drain off any water (if any)
- When water is drained off, close the drain screw.
- It is unlikely the complete fuel system will require bleeding.
- Run for 5 minutes.
- Check that the drain union is tight and that there are no leaks.
- Note; the boat builder may have fitted an additional water trap in the fuel system before the engine. Ensure that this is drained regularly.

## 5. Primary and Secondary Fuel Filter Change



### **CAUTION:**

WEAR DISPOSABLE GLOVES.

REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.

- Ensure the fuel tank is at least  $\frac{3}{4}$  full prior to undertaking this procedure.
- Turn off the main boat fuel supply tap, located on or near the fuel tank.
- Place a small drip tray under the filter body.
- Remove the fuel filters using the oil filter wrench supplied. Unscrew them until loose then remove by hand.
- Primary fuel filter only – Retain the metal fuel filter drain screw from old filter and re-use in the new filter.
- Smear a small amount of clean fuel on all of the **O** ring seals that are supplied with the new filter element.
- Screw the new element back into the filter head.
- Turn the main boat fuel supply tap back on.
- Ensure system is correctly bled before attempting start up.

The same procedure is used for both Primary and secondary fuel filter changes

## 6. Bleeding the Fuel System.



### **CAUTION:**

**WEAR DISPOSABLE GLOVES.**

**REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- Ensure the fuel tank is at least  $\frac{3}{4}$  full prior to undertaking this procedure.
- See Fuel paragraph, Section 3, in Yanmar Engine Operation Manual.

## 7. Cooling System



### **CAUTION:**

**DO NOT CHECK THE COOLANT LEVEL WHEN THE ENGINE IS HOT.**

**REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- To check the coolant level, ensure that the engine has been shut down for at least half an hour.
- The coolant level can be checked visually and should be between the two level marks moulded on the front of the white, plastic expansion tank.
- If required, top up the level with coolant (50% clean tap water and 50% ethylene glycol based anti-freeze) through the expansion tank filler cap.
- Do not use water only to top up as this weakens the coolant mix, reducing the level of frost protection and anti-corrosion protection of the coolant.

## 8. Belt Adjustment



### **CAUTION:**

**REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- Depress the longest run of the drive belt to be checked. If the travel exceeds 15 –20 mm using hard finger pressure, the belt needs re-tensioning.
- Loosen the upper adjuster bolts on the alternator, and the lower mounting pivot nut and bolt, pull out using hand pressure.
- Pull the alternator away from the engine to tighten the belt.
- Hold the alternator in position and re-tighten all the bolts.

- Note: if the belts are over tightened alternator bearing failure will occur.

## 9. Belt Maintenance

- Do not allow oil to contact the belt. Oil attacks the construction of the belt, reduces the drive efficiency, and will ultimately cause, it to fail prematurely.
- Replace the belt, if it cracks; splits or as the adjustment nears the limit of its travel.
- Note: Some boat builders may remove one or more of the alternators during the installation of the engine. It is essential that when the alternators are re-fitted that the alignment is perfect or premature belt wear will occur.

## 10. Belt Replacement



### **CAUTION:**

**REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

- Ensure that you have the correct new belt prior to starting this procedure (some engines may have been fitted with non-standard optional alternators which may not have the belt sizes listed. Make a note of belt size on delivery).
- Loosen the top adjuster bolts, and the lower mounting pivot nut and bolt.
- Push the alternator towards the engine to loosen the belt.
- Remove the seawater pump (may not be required, depending on seawater pump option fitted).
- Remove the belt.
- Hold the belt in position over the top alternator pulley; rotate the engine, if required, by hand, to guide the new belt into the pulley “V”s check it is correctly seated in the pulley.
- Replace seawater pump (if required).
- Re-tension the belt as above.

**Note: Some engines maybe fitted with a side mounted belt driven seawater pump. Similar belt tightening procedure will apply for this.**

## 11. Panel Maintenance



### **CAUTION:**

**TURN BATTERY ISOLATION SWITCHES OFF  
REMOVE THE IGNITION KEY BEFORE WORKING IN ENGINE COMPARTMENT.**

### Warning Light Bulb replacement

Release the panel from its mounting

1. To replace an illumination bulb.
  - a. The bulbs are accessible from the rear of the panel. This can be gently removed by pulling off the wires, unscrewing the nut and pulling out the bulb housing from the panel.
2. To replace any gauge
  - a. The gauges are accessible from rear of the panel. Unplug the wire connectors, unscrew and pull the gauge out from the panel.
3. Periodically squirt a lubricant in to the key switch slot with key removed (a lubricant such as WD40 – with silicon, other lubricants are available). Then with the battery master switch turned off operate key switch a couple of times to ensure lubricant works in to mechanism.

## 12. Sacrificial Anode Change

- The anode is located in the "T" fitting on top of the engine at the front of the engine facing forward.

## 13. Raw Water Pump Impeller Change

The pump is located on the front of the engine bolted to either the P.T.O pulley camshaft drive or side mounted and driven by a belt. Procedure is similar for all.

- Remove the pump cover plate.
- Remove the pump impeller, (special tools are available from chandleries to assist with this task)
- Note, do not lever against the front of the pulley housing as it is easily damaged, and inspect the pump housing and front wear plate.
- Replace the impeller.

- Replace the cover plate gasket if damaged.
- Replace any other worn components as necessary.

#### **14. Engine Heat Exchanger Tube Stack Flushing.**

- When the engine is cold, drain the water from the engine block, drain screw is located behind the heat exchanger.
- Drain water from the heat exchanger, the drain plug is in the bottom of the heat exchanger end cap.
- Disconnect pipes and hoses from engine heat exchanger.
- Remove the heat exchanger from the engine.
- Mark position, and remove end caps from engine heat exchanger.
- Carefully remove the tube stack from the centre of the heat exchanger.
- Fully flush between the tubes to remove any dirt or scum build up.
- Inspect the tube stack replace if damaged.
- Reassemble and refit checking the end cap "O" rings are in good condition

Refill the engine with coolant as described earlier (page 14).

#### **15. Winterization of Seawater Cooling System.**

- To prevent frost damage to the seawater cooling circuit components because of water freezing, ensure all seawater or raw water is drained from the system
- Alternatively, run neat anti-freeze through the seawater pump inlet to protect the system
- Ensure that the anti-freeze is drained before starting the engine the next season to ensure that it does not get into the marine environment. Dispose of correctly

## SECTION 6 - Shire Service Parts

### Shire 14 30/40/50 Workboat

Primary Fuel Filter	RDG9188346
Secondary Fuel Filter	119802-55801
50A Alternator Belt (Shire 30)	25132-003700
50A Alternator Belt (Shire 40/50)	RDG6079
140A Alternator Belt (optional)	RDG6076
Air Filter Element	RDG5795
Engine Oil Filter Element	129150-35153
Zinc anti corrosive anode	119574-44150
Zinc sticker	124220-09340
Raw Water Pump Impeller for front crank mounted pump (option on all engines).	RDG0109627
Raw water pump Impeller for front camshaft mounted pump (standard on 30WB).	RDG010A5
Raw water pump impeller for side-mounted, belt-driven pump.(option on 40/50WB).	RDG01010242
Raw water pump impeller for front camshaft mounted pump (standard on 40/50WB)	RDG010A4

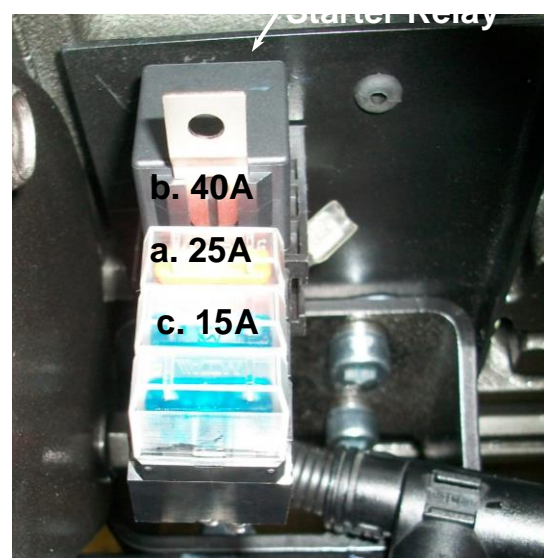
### Fuses

The electrical system is fitted with three blade type fuses:

- a. Engine start control system 25A (RDG1152)
- b. Engine stop control system 40A (RDG3246)
- c. Dash Panel supply 15A (RDG3245)

Engine oil is available from Shanks & Shire dealers in convenient 5 litre containers (part no. RDG6110).

Diesel fuel additive is available from Shire dealers in a 375ml container (part no. RDG80210219).



## SECTION 7 - Service Schedule

### Specifications and Capacities

ENGINE OIL CAPACITY (WITH FILTER):

Engine	Capacity (litres)	Capacity (Pints)
30	5.5	9.7
40/50	7.4	13

GEARBOX OIL CAPACITY (EXCLUDING COOLER):

Gearbox	Capacity (Litres)	Capacity (Pints)
PRM 80 (30)	0.57	1.0
PRM 120 (30) option	0.8	1.4
PRM 150 (30/40/50)	1.4	2.5
PRM 260 (40/50) option	1.5	2.7

Engine and Gearbox Oil: SAE 15W 40 API Class CD. \*

(N.B. PRM 80 & 120 gearbox – ATF (Automatic Transmission Fluid)).

Coolant: 50% Clean Water + 50% Ethylene Glycol Antifreeze.

### Service Intervals

	Check	Change	Notes
Engine Oil & Filter	Daily (level)	Every 250 hours Or 12 Months*	First change after 50 hrs.
Gearbox Oil	Weekly (level)	Every 250 hours Or 12 Months*	First change after 25 hrs.
Coolant level	Daily (level)	Every 24 Months	
Diesel Fuel Filter Primary & Secondary	50 hours	Every 500 hours Or 12 Months*	Drain water every 50 hours, or monthly #
Air Filter Element	250 Hours	Every 500 hours or 24 Months	Sooner if required
Drive belts	Daily	As required	Adjust as necessary
Sacrificial Anode's	250hrs	Every 500hrs or 12 months*	Check and change more frequently if local conditions require it.

Raw Water pump Impeller	250hrs	Every 500hrs or 12 months*	Change more frequently if operating in shallow or sandy waters
Main Heat Exchanger	500hrs		Or check more frequently if local conditions require.  Remove & clean as instructions on pg. 26
Key Switch	Lubricate	Every 150 hours Or 12 Months *	As per Instructions section 12, Dash Panel Maintenance

\* Whichever occurs first.

# If large quantities of water are found in fuel when filter drained, increase frequency of draining.





2. Engine Wiring Diagram Shire 30 & 35 (with Glowplugs)

Shire Canal Boat Engine

(Also Work Boat engines with either single or twin Alternators)

Wiring Diagram  
14 30 & 35

12 Volt

RDG205A9 Loom with  
additional Glowplug Relay Loom  
RDG205A16  
Issue 1

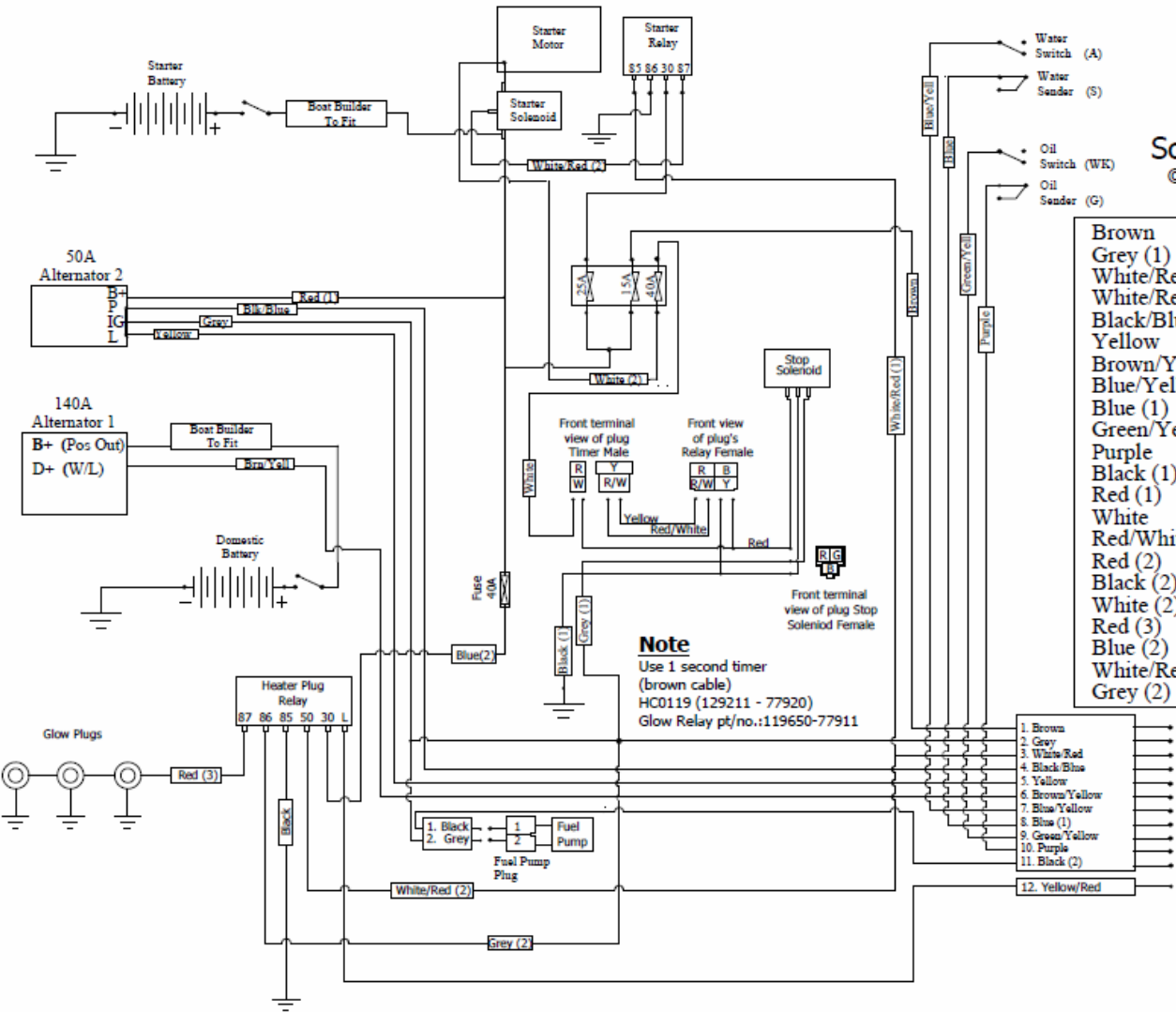
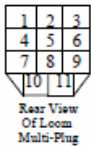
Schematic Only  
© E.P. Barrus Ltd

Conductor Sizes

Brown	Dash Panel live	14A	No. 1- 11 Pin connector
Grey (1)	Ignition on	5A	No. 2- 11 Pin connector
White/Red (1)	Trigger to starter sol.	14A	No. 3- 11 Pin connector
White/Red (2)	Live to Start Sol.	14A	
Black/Blue	Tacho wire	5A	No. 4- 11 Pin connector
Yellow	Charge W/L 50A alt	5A	No. 5- 11 Pin connector
Brown/Yellow	Charge W/L 110A alt	5A	No. 6- 11 Pin connector
Blue/Yellow	Water switch	5A	No. 7- 11 Pin connector
Blue (1)	Water sender	5A	No. 8- 11 Pin connector
Green/Yellow	Oil switch	5A	No. 9- 11 Pin connector
Purple	Oil sender	5A	No. 10- 11 Pin connector
Black (1)	Earth	14A	No. 11- 11 Pin connector
Red (1)	50A alt live	55A	
White	Stop sol. pull in	25A	
Red/White	7kw Live	14A	
Red (2)	Fuse Feeds	14A	
Black (2)	Earth	14A	
White (2)	Stop sol. pull in trig	5A	
Red (3)	Glowplug Supply	30A	
Blue (2)	Glowplug Relay Supply	30A	
White/Red (2)	Starter to Heater Relay	5A	
Grey (2)	Stop Solenoid to Relay	5A	

Fuses

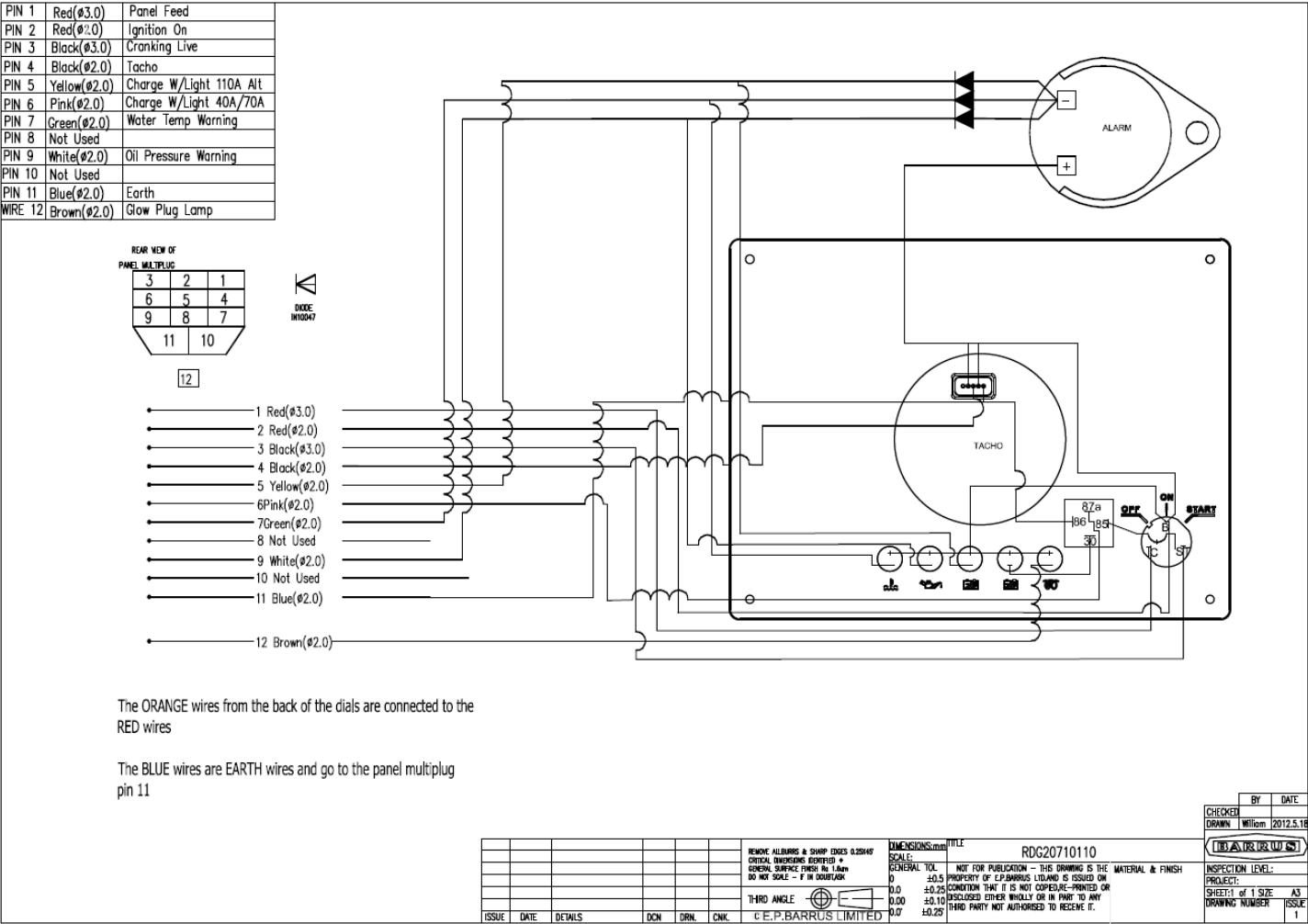
Engine start control system	25amp (RDG1152)
Engine stop control system	40amp (RDG3246)
Dash panel supply	15amp (RDG3245)
Glowplug Supply	40amp (RDG3246)



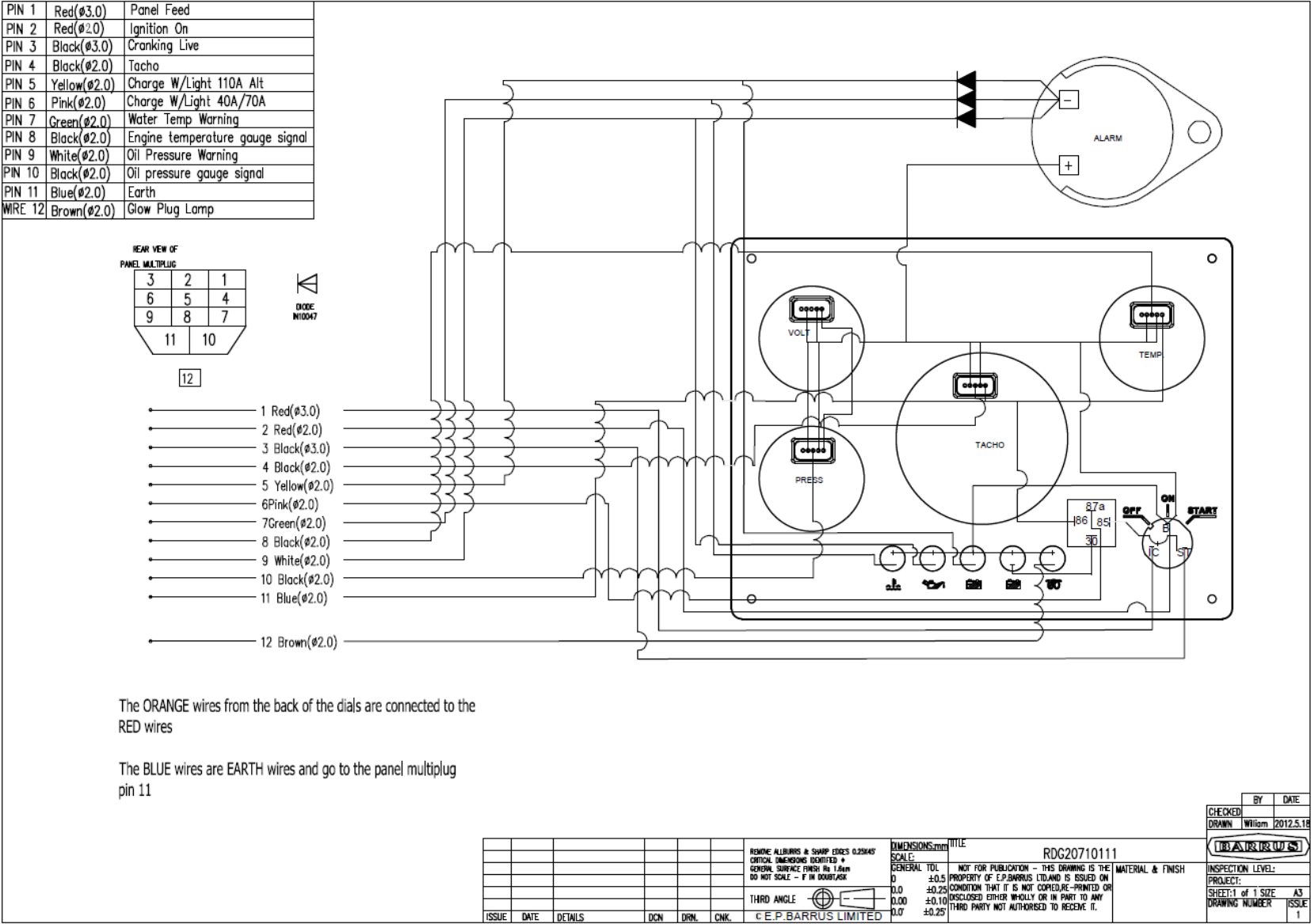
**Note**  
Use 1 second timer  
(brown cable)  
HC0119 (129211 - 77920)  
Glow Relay pt/no.:119650-77911

Panel Wiring Diagram

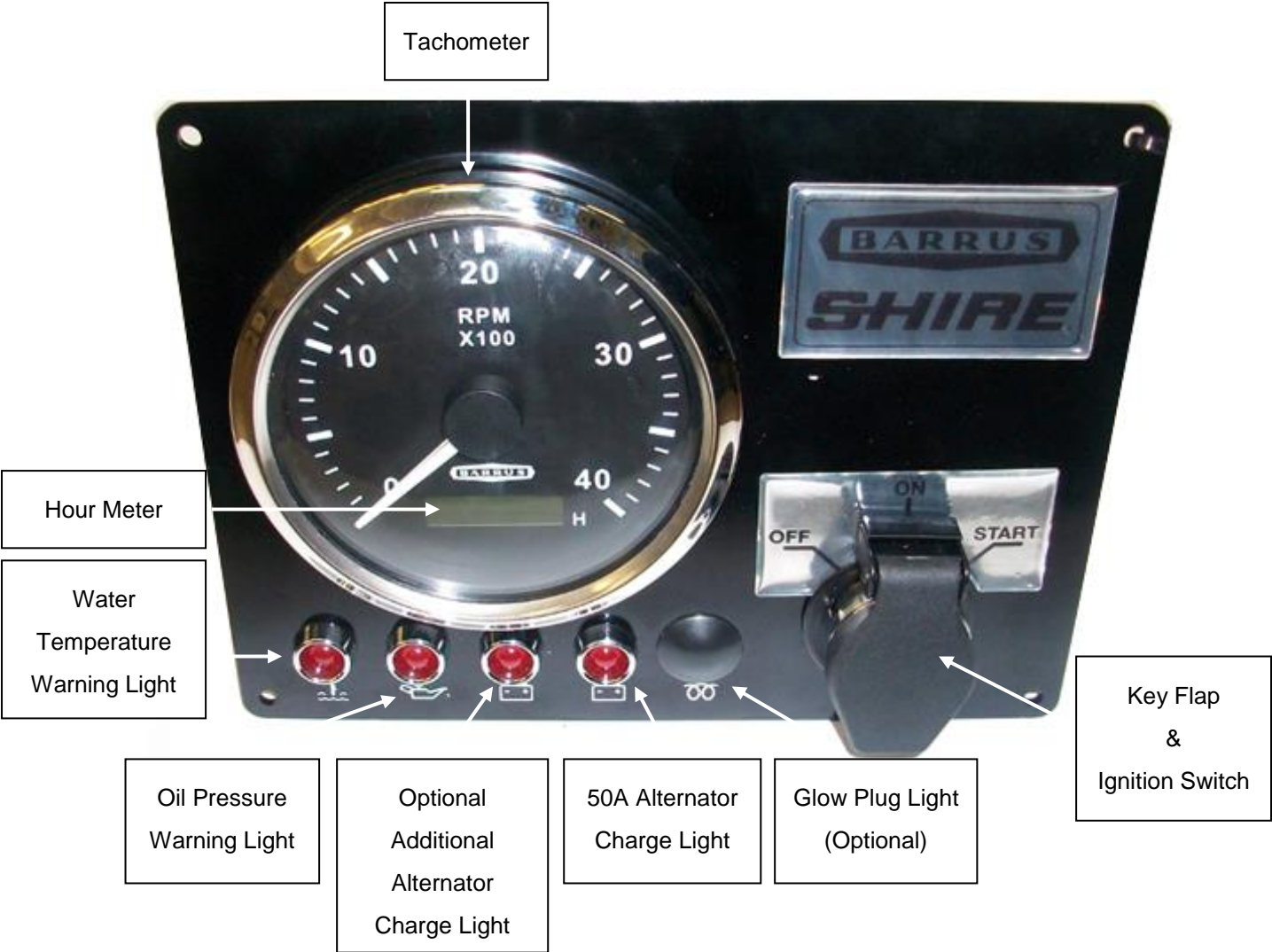
Standard Panel



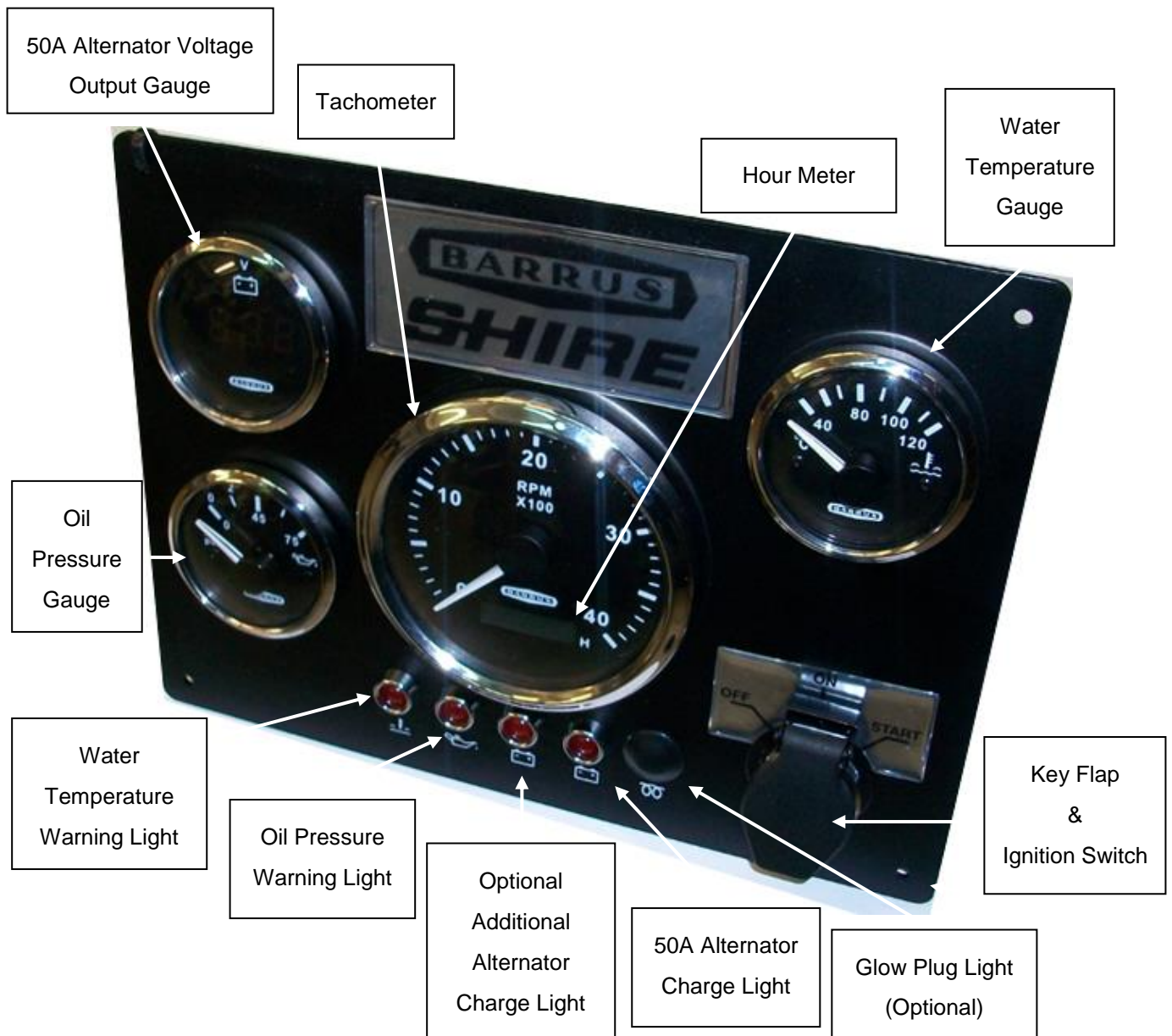
Deluxe Panel



RDG20710110 - Standard Instrument Panel



## RDG20710111 - Shire Deluxe Instrument Panel



## SECTION 9 – Dealer List

Area	Company	Telephone	Email
BERKSHIRE	Bluenine Marine	01189 406482	bluenine@marine7957.fsnet.co.uk
	Aquatec Marine	07880793686	mark@aquatecmarine.com
CORNWALL	Black Dog Marine	01503 265898	blackdogmarine@googlemail.com
	Cellar Marine	01326 280214	john@cellarmarine.com
DEVON	Sleeman & Hawkin Ltd	01626 778266	keith@sleeman-hawkin.co.uk
ESSEX	French Marine Motors Ltd	01206 305233	chris@frenchmarine.com
	French Marine Motors Ltd	01255 850303	info@frenchmarine.com
HAMPSHIRE	Marine Power Ltd	0238 0403918	info@marine-power.co.uk
HERTFORDSHIRE	P & S Marine	01923 248372	(no email contact)
KENT	Freedom Marine	01303 844400	freedommarine@btconnect.com
LONDON	De La Hunty Marine	02089 792121	delahuntymarine@btinternet.com
NORFOLK	French Marine Motors Ltd	01603 722079	info@frenchmarine.com
NOTTINGHAM	Farndon Marina	01636 705483	info@farndonmarina.co.uk
SOUTH AYRSHIRE	West Coat Marine	01292 318121	neilwscsm@btinternet.com
SUFFOLK	John Buckley	01502 724721	info@harbourmarine.co.uk
YORKSHIRE	Rodley Boat Centre	01132 576132	John.snowdenz@ntlworld.com
EIRE	Dun Laoghaire Marine Services	00353 12104776	info@dlms.ie
EIRE	O'Sullivan's Marine	003536 67124524	brian@sulliansmarine.com



# ***SHIRE***<sup>®</sup>

## **SERVICE RECORD CARD**

<b>Model:</b> .....	
<b>Engine No:</b> .....	
<b>EPB Stamp</b>  <b>Actual Hours:</b> PDI  <b>Signed:</b>	<b>Dealer Stamp</b>  <b>Actual Hours:</b> 1st  <b>Signed:</b>
<b>Dealer Stamp</b>  <b>Actual Hours:</b> 2nd  <b>Signed:</b>	<b>Dealer Stamp</b>  <b>Actual Hours:</b> 3rd  <b>Signed:</b>
<b>Dealer Stamp</b>  <b>Actual Hours:</b> 4th  <b>Signed:</b>	<b>Dealer Stamp</b>  <b>Actual Hours:</b> 5th  <b>Signed:</b>
<b>Dealer Stamp</b>  <b>Actual Hours:</b> 6th  <b>Signed:</b>	<b>Dealer Stamp</b>  <b>Actual Hours:</b> 7th  <b>Signed:</b>

**Please refer to Owners Manual for service intervals**